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Ralf Krueger

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EXAMINER

PRITCHETT, JOSHUA L

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RALF KRUEGER

Appeal 2008-4239
Application 10/605,492
Technology Center 2800

Decided: October 22, 2008

Before BRADLEY R. GARRIS, ROMULO H. DELMENDO, and
JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) (2002) from the
Examiner's final rejection of pending claims 1-3 and 8-13.¹ (Examiner's

¹ Claims 4-7 have been canceled. (Amended Appeal Brief filed June 20, 2007, hereinafter "Br.," 2).

Answer entered September 10, 2007, hereinafter “Ans.”). We have jurisdiction pursuant to 35 U.S.C. § 6(b) (2002).

We REVERSE.

Appellant’s claimed invention is directed to an apparatus and method for implementing phase-contrast or modulation-observation on microscopes with a dynamically tiltable mounted modulator. (Spec. [0011]). Appellant states that the presently claimed apparatus has the advantages of providing a continuous phase shift during utilization of the microscope without the use of a large number of different modulators. (Spec. [0009] and [0011]).

Claims 1, 11, 12, and 13, the independent claims on appeal, recite:

1. An apparatus for implementing phase-contrast or modulation-contrast observation on microscopes with the aid of a modulator arranged in each pupil plane in the observation beam path and containing at least one layer modifying the phase or amplitude, and of a stop arranged in the illumination beam path, wherein the modulator is mounted dynamically tiltable and wherein at least a portion of the at least one layer modifying the phase or amplitude is transmissive.

11. An apparatus for implementing phase-contrast or modulation-contrast observation on microscopes with the aid of a modulator arranged in each pupil plane in the observation beam path and containing at least one layer modifying the phase or amplitude, and of a stop arranged in the illumination beam path, wherein for phase shifting, optical polarization means in combination with retardation plates are present and wherein the modulator is mounted dynamically tiltable and at least a portion of the at least one layer modifying the phase or amplitude is transmissive.

12. An apparatus for implementing phase-contrast or modulation-contrast observation on microscopes with the aid of a modulator arranged in each pupil plane in the observation beam path and containing at least one layer modifying the phase

or amplitude, and of a stop arranged in the illumination beam path, wherein various modulators are arranged on a carrier in a manner introducible into the beam path of the microscope and are selectably mounted, dynamically tiltable individually or dynamically tiltable together with the carrier, on that carrier and wherein at least a portion of the at least one layer modifying the phase or amplitude is non-reflective.

13. A method for implementing a defined phase shift in the implementation of phase-contrast or modulation-contrast observation on microscopes with the aid of a modulator arranged in each pupil plane in the observation beam path and containing at least one layer modifying the phase or amplitude, and of a stop arranged in the illumination beam path of the microscope, wherein the modulator is dynamically tilted and wherein the at least one layer modifying the phase or amplitude is transmissive.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Endou	5,777,783	Jul. 7, 1998
Kobayashi	6,057,894	May 2, 2000
Wilson	6,687,052	Feb. 3, 2004 (Sep. 13, 2001)

There are four grounds of rejection before us on appeal: (1) claims 1, 12, and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Endou; (2) claims 2, 8, 9, and 11 are rejected as being unpatentable over Endou in view of Wilson; (3) claim 3 is rejected as being unpatentable over Endou in view of Kobayashi; and (4) claim 10 is rejected as being unpatentable over Endou in view of Kobayashi and further in view of Wilson.

The principal dispute between the Examiner and Appellant is whether Endou suggests that the modulator described therein may be mounted

dynamically tiltable. The Examiner determined because Endou's suggests rotating the modulator, it would have been obvious to make the modulator of Endou dynamically tiltable to allow for modulation contrast without having to replace the modulator. *Id.*

Appellant contends that Endou does not suggest mounting the modulator in a dynamically tiltable fashion, because Endou teaches rotation for the purpose of adjusting the polarity of the contrast of the image not modulation contrast, and rotation and tilting are two different operations. (Br. 7, 11, and 12).

ISSUE

Based on the contentions of the Examiner and the Appellant, the issue presented is: Has Appellant shown error in the Examiner's determination that Endou suggests mounting the modulator so as to be dynamically tiltable?

We answer this question in the affirmative.

FINDINGS OF FACT

The record supports the following Findings of Fact (FF) by a preponderance of the evidence.

1. Appellant's Specification states:

According to the present invention, in order to achieve a defined phase shift from the zero-order diffraction to higher diffraction orders, the modulator is mounted tiltable in the plane conjugated with the objective exit pupil. In the context of strip-shaped modulators, the tilt is preferably accomplished in the direction of the modulator strips. By setting different tilt

angles, correspondingly different phase shifts can be implemented. If the angular adjustment is performed continuously, a continuous modification of the phase shift can also be implemented.
(Spec. [0011]).

2. Endou states:

In observing a modulation contrast image, unlike in observing a phase contrast image, it is necessary to rotate a pupil modulator to adjust the polarity of the contrast of the image. According to this embodiment, since the pupil modulator slider is employed, the modulator can be easily removed from the microscope main body and a whole unit of the modulator can be exchanged with another one.

Since the pupil modulator **26b** is detachably provided in the main microscope housing **1**, the size of the pupil modulating section is reduced and the operability is improved.
(Col. 13, ll. 5-15).

3. Endou describes the position of the pupil modulator with respect to the optical axis. (Col. 11, ll. 28-36).

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’ ” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1734 (2007). In *KSR*, the Supreme Court explained, “[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely

bars its patentability.” *Id.* at 1740. However, the Court went on to state, “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” The Court further explained that “[a]lthough common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* at 1740-1741.

ANALYSIS

Appellant relies on similar arguments for all four grounds of rejection. Therefore, we address all grounds of rejection together. After consideration of both the Examiner’s and Appellant’s contentions, we agree with Appellant that the presently claimed apparatus would not have been obvious over Endou.

The Examiner contends that because Endou teaches rotation without any reference to the axis about which the rotation occurs, Endou’s rotation includes tilting. (Ans. 7). The Examiner reasons that the axis of rotation could be perpendicular to the optical axis, which would adjust the inclination, or tilt the modulator. *Id.* The Examiner determined that Endou suggests mounting the modulator dynamically tiltable “for the purpose of allowing for modulation contrast without having to remove the modulator and replace it with another modulator.” (Ans. 4). However, the Examiner fails to provide sufficient basis for this determination. Although Endou discloses rotation of the modulator in order to adjust the polarity of the

contrast of the image (FF 2), Endou is silent as to rotation for the purpose of adjusting the contrast of the image. The Examiner's reasoning fails to sufficiently explain how Endou's teaching of rotating the modulator for polarity purposes would suggest to one of ordinary skill in the art to mount the modulator dynamically tiltable to provide modulation contrast. *See KSR, supra*.

In addition, there is no persuasive evidence on the record that the rotation suggested by Endou to adjust the polarity of the contrast of the image would have been about an axis perpendicular to the optical axis, particularly where Endou describes the position of the pupil modulator with respect to the optical axis. (FF 3). Although we agree that "rotation" depends on the axis about which the modulator is rotated, the Examiner fails to provide sufficient reasoning as to why one of ordinary skill in the art would have chosen rotation perpendicular to the optical axis, rather than about the optical axis. Further, to the extent that the Examiner's reasoning relies on common sense, the basis for such a common sense rationale is not present in Endou, and no other sufficient basis for the Examiner's rationale is identified in the rejection. *See KSR, supra*. Therefore, the Examiner's decision rejecting claims 1-3 and 8-13 is reversed.

CONCLUSION

For the foregoing reasons, Appellant has shown reversible error on the part of the Examiner.

ORDER

Appeal 2008-4239
Application 10/605,492

The decision of the Examiner rejecting claims 1-3 and 8-13 under 35
U.S.C. § 103(a) is reversed.

REVERSED

PL initial:
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